Energy Solutions Centre Inc.

Annual report

2001

energy solutions centre

YUKON

June 28, 2002

Lorne Austring
Chair, Yukon Development Corporation
Box 2703
Whitehorse, Yukon Y1A 2C6

Dear Mr. Austring:

On behalf of the Board and Managing Director, I am pleased to submit the first annual report of the Energy Solutions Centre for the 2001 calendar year.

The Centre is a result of a shared vision between our parent company, Yukon Development Corporation, and our funding partner, Natural Resources Canada, to deliver consumer cost savings and combat climate change through improved energy management. It is grounded in a common belief that fossil fuel consumption can be reduced or displaced by transforming the market to proven efficiency and renewable energy technologies. The long-term goal is to ensure these solutions become standard options in the Yukon market.

Our first year of operations was defined by numerous challenges and advancements in achieving this ambitious agenda. After officially opening in March 2001, we introduced a series of innovative energy initiatives by proactively collaborating with communities, First Nations, local governments and the public and private sectors.

The highlights included designing and implementing new programs to displace fossil fuel heating for businesses and governments, promoting energy demand side management to residential consumers, and signing an agreement with the tourism industry to target integrated energy solutions for this sector. Commercial applications of renewable technologies such as air-to-air and ground source heat pumps were assessed for the sub-arctic environment, and a series of energy training courses held to enhance capacity in the local market.

The Centre is pleased that these efforts helped to maintain the Yukon's position as a Canadian leader in the development and delivery of efficiency and renewable energy programs. We were delighted to share in the success of four national energy awards earned by the territory

and our parent company, and are committed to continuing this level of outstanding performance.

These achievements are a direct result of the immense dedication and hard work of our staff, consultants, contractors, and our community, First Nation, business and public sector partners. Out of necessity and plain good sense, effective home-grown solutions have been developed by pooling financial and technical resources. The combination of collective efforts fused with innovation is testament to the significant effect that a small jurisdiction can have through the right blending of public policy leadership, strategic investments and commitment.

We look forward to building on our success and pursuing new opportunities in the local energy market over the coming year.

Yours sincerely,

Sally Wright, Chair

cc Board of Directors

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COMPANY PROFILE

PROFILE AND MANDATE

The Energy Solutions Centre Inc., incorporated under the *Business Corporations Act*, is a wholly owned subsidiary of Yukon Development Corporation, a crown corporation of the Yukon government.

The Centre, a joint initiative between Yukon Development Corporation and Natural Resources Canada (NRCan), strives to set the circumpolar standard for cost-effective, renewable and integrated energy services, environmental stewardship and northern innovation in the energy sector. This vision is accomplished through a core strategy that consolidates federal and territorial energy resources, and forges partnerships with the private and public sectors to mobilize projects that result in energy cost savings and reduce greenhouse gas emissions.

The Centre's objective is to effectively engage the Yukon public to utilize its programs and services so the associated values and practices will be incorporated into daily life. This will enable a market shift to demand side management, sustainable design practices, and a greater use of renewable energy to decrease the reliance on fossil fuels.

With the assistance of federal and territorial energy programs, the Centre facilitates these opportunities by providing qualified technical services that deliver integrated energy solutions for clients. It also enhances capacity within the local energy sector through targeted training, conducts research and demonstration projects for efficiency and renewable energy technologies, and undertakes public awareness activities related to climate change.

The Centre is partly supported by a three-year funding agreement between Yukon Development Corporation and NRCan.

CORPORATE AND ACCOUNTABILITY STRUCTURE

The Energy Solutions Centre Inc. is governed by a board of four directors appointed by Yukon Development Corporation.

With input and advice from NRCan and territorial agencies, each year the board reviews and approves a business plan that establishes the priorities and initiatives for the Centre and builds on the energy policy objectives of Yukon Development Corporation and its sole shareholder, the Yukon government. Corporate performance is monitored through regular meetings of the board.

The Managing Director of the Centre leads the coordination, administration and implementation of programs and services consistent with the annual business plan and board direction. The director is assisted by consultants and contractors who provide technical assistance and outreach for ongoing and specific initiatives by collaborating with government departments and agencies, non-government and industry organizations, municipalities and the private sector.

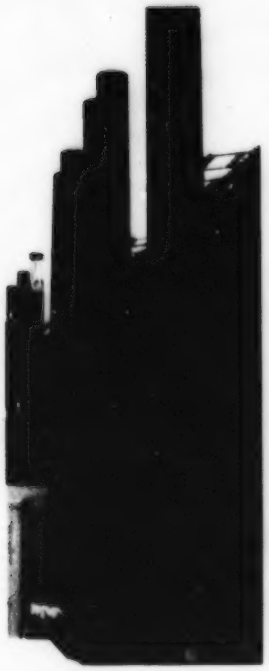
As a results-oriented organization, the Centre is developing Key Performance Indicators (KPIs) to measure the energy, environmental and economic progress of significant activities. KPIs provide critical baseline data for evaluating the success of initiatives and identifying those areas needing improvement. They are important strategic management tools that will guide the Centre's future direction and continue to be refined over time. KPIs were phased in during 2001 and comprehensive reporting is planned for the next year.

Beyond these accountability mechanisms, the Centre files quarterly and annual reports with its parent, Yukon Development Corporation, and major partner, Natural Resources Canada.

PLANNING CONTEXT FOR 2001

The Yukon has a population of about 30,000, scattered in 18 primarily rural and remote communities over an area larger than the combined landmass of Germany, Netherlands and Belgium. With the exception of Whitehorse, all other towns and villages are comprised of less than 2,000 residents.

The Yukon relies heavily on imported goods, many of which are transported over 2,000 kilometres to Whitehorse from the nearest



major cities in British Columbia and Alberta. Given the distance and small market, the Yukon is last on the supply chain and not a priority for many distributors. This means it can be difficult to secure new or specialty items as well as technical expertise for ongoing support and maintenance.

This dependence on products, including refined fuels, increases the cost of living. Whitehorse residents pay prices that average between 11.5% and 25.7% higher than in Vancouver and Edmonton. Aside from the distance between communities and the added consumption of petroleum products for transportation, the Yukon's dependence on fossil fuels is greater per capita than the Canadian average because of its extensive use for heating and electricity generation. This reliance is exacerbated by sub-arctic climatic conditions that exist for seven months of the year.

The Yukon enjoys an abundance of renewable energy sources, including hydroelectricity, wood, solar and wind, but development has been hindered by the territory's small market, remoteness and lack of technical capacity. Establishing new, primary power supplies from renewable sources is often only economically viable on a grand scale and requires access to a stable and large market. These conditions do not exist here because of the low population base, the economic volatility caused by fluctuating commodity prices and the Yukon's isolation from the North American electrical grid.

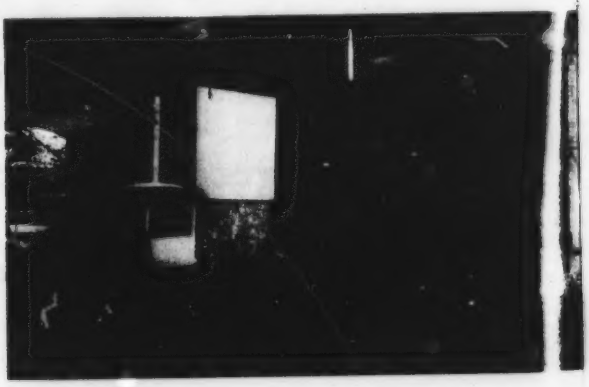
The Yukon has also faced rising electricity costs because the power infrastructure was originally designed to accommodate large mining

operations. Over the past decade, these customers have ceased operations and once disconnected, revenue for the utility dropped, a surplus of generation capacity was created and the fixed costs had to be passed on to the remaining consumers.

Developing small renewable energy sources for off-grid applications or to displace diesel-generated electricity has been a challenge due to insufficient technical capacity along with financial, regulatory and economic factors. Renewable technology must be frequently adapted to the sub-arctic climate and properly maintained to ensure operational efficiency and longevity under harsh conditions.

Another barrier to improving energy use is addressing the legacy of poor building development in the Yukon. From the Klondike gold rush to the construction of the Alaska Highway during World War II to the rapid economic expansion of the 1960s and 1970s, structures were often erected quickly, without regard for the climate, permafrost or topography. Design and construction were based on standards from southern jurisdictions, resulting in deficient buildings with high energy and maintenance costs.

This trend still continues, particularly in the commercial sector with national chains replicating designs and directing the use of specific energy sources regardless of the local environment. Gradual improvements have occurred in the residential sector over the past 20 years due to higher insulation levels, better window designs and improved vapour barrier materials and installation. However,



the average size of a house has increased so energy use remains an important issue for many residents.

Given this context, the Energy Solutions Centre has developed a series of demand side management and renewable energy supply initiatives to meet specific market opportunities and to displace or reduce the reliance on fossil fuels for heating and electricity generation. The approach is multi-faceted and focuses on adaptation, innovation, and pooling and leveraging technical and financial resources with the community, utilities, and public and private sectors.

Program design has been shaped by consumption data compiled on the territorial energy market, most notably from the housing study completed by Yukon Housing Corporation in 2000, and a residential energy end-use survey commissioned by the Centre in July 2001. Client participation is encouraged through a combination of promotion, education, training and financial incentives. The long-term goal is to transform the local market so integrated energy solutions become standard options rather than specialty features.

The installation of efficiency and renewable technologies consistently produces multiple benefits. Consumers enjoy permanent cost savings, and living comfort and air quality are improved, local capacity enhanced, economic activity stimulated and greenhouse gas emissions reduced. And since the barriers to integrated energy solutions in the Yukon are similar to many rural and remote communities, the Centre's successes can be replicated across the country.

The activities of the Centre are becoming increasingly important as the effects of greenhouse gas emissions become more understood. This is particularly relevant to northern Canada, which is already experiencing accelerated climate change and is expected to be disproportionately impacted.

YEAR IN REVIEW

BUILDING OUR BUSINESS

The Energy Solutions Centre believes that how it conducts business is just as important as the activities it pursues. Its interaction with clients, partners and the public defines who it is and the values that it embraces. In its drive for excellence, the Centre responds to the needs and expectations of customers, maximizes the local benefits of operations, demonstrates environmental stewardship, and fosters an atmosphere of innovation and prudent risk taking.

The Centre accomplishes these tasks through strong fiscal management and partnership with the Yukon's private sector as well as federal, territorial and local governments to support the Centre's core business. Its core business includes an array of contract repayable technical services for audits and integrated energy solutions, and brokering access to federal and territorial energy programs. Where necessary, clients are encouraged to implement recommended energy solutions by utilizing low-cost financing offered by the Centre through leases and loans.

The Centre also creates targeted sectoral strategies, starting with the Yukon tourism industry, to accelerate the implementation of energy cost-saving solutions and to reduce greenhouse gas emissions.

SETTING UP SHOP

The Energy Solutions Centre officially opened in March 2001 at a storefront location in downtown Whitehorse. The ground floor offices were carefully selected after thoroughly assessing available commercial space. The high public visibility encourages walk-in clientele and easy accessibility ensures entry for people with disabilities.

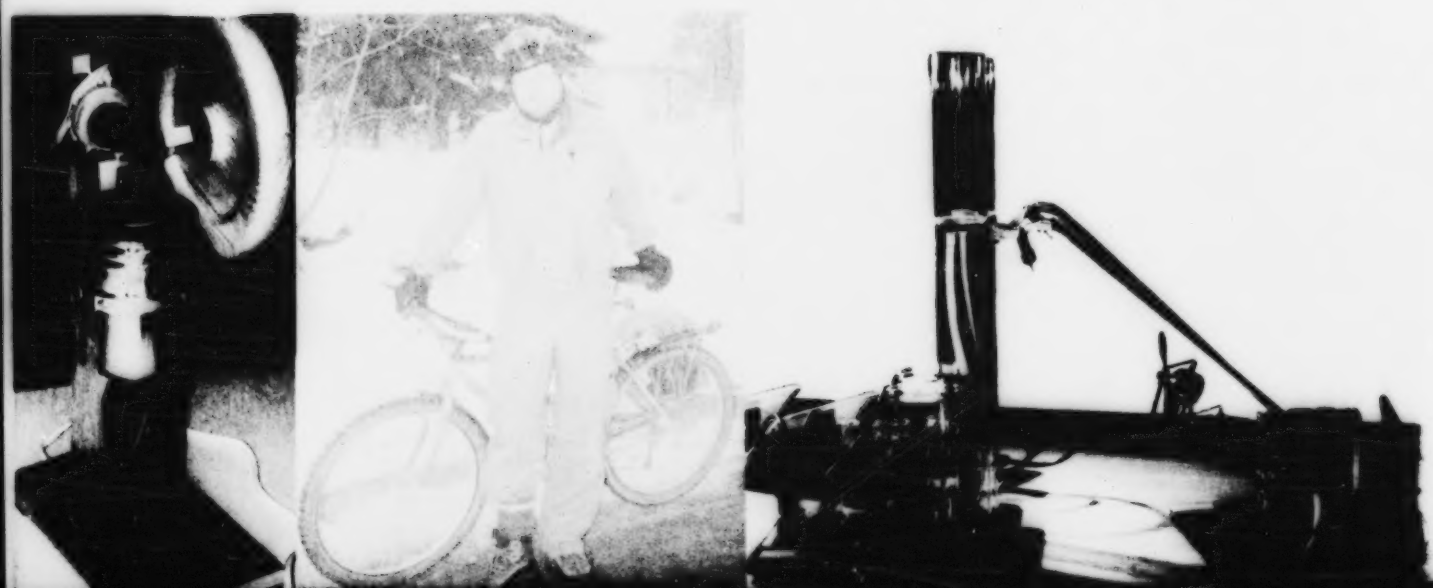
The foyer houses an extensive resource library (open to the public) that contains information about federal and territorial energy initiatives, efficiency and renewable energy technologies, and climate change. A computer with high-speed internet access assists with information searches while the Energy Solutions Centre website (www.nrgsc.yk.ca) offers material on programs and services, and helpful links to other energy resources.

WALKING THE TALK

The Energy Solutions Centre is committed to maximizing local benefits and reducing greenhouse gas emissions in all its operations.

The staff is proud that over 90% of its purchases are from Yukon businesses. Almost all office furniture is locally manufactured and, almost exclusively, contractors used to design, deliver or implement a program or service are Yukon-based.

Plans were initiated in 2001 to replace the lease vehicle with a hybrid electric car. At the same time, various demand side management activities were implemented at the Centre's premises. A thermostat timer reduces heat use and a light sensor decreases power consumption in the office equipment room. Consultants and employees are encouraged to conserve electricity by optimizing natural light, minimizing the need for lighting in unoccupied areas and turning off computers and other office equipment not in use. Telecommuting is also actively supported.



Beyond these activities, through the Renewable Power Sales Incentive Program, the Centre arranged for the landlord to install an electric boiler to heat the building. Surplus hydroelectricity is used to displace fossil fuel heating and provide cost-savings to the property owner since the power price is cheaper than propane or stove oil.

The Centre also established internal recycling and composting programs and ensured a bike rack was installed at the office to encourage staff and consultants to reduce vehicular commuting. And it was pleased to contribute to Yukon Development Corporation's first action plan submitted to the Voluntary Challenge and Registry Inc. for tracking, reporting and reducing greenhouse gas emissions. This plan earned the highest designation of Gold Level Reporter.

CORPORATE OUTREACH THAT STARTS AT HOME

Consistent with its mandate, in 2001, the Centre played an active role in community events and with non-profit organizations. It participated in the annual Lions Club trade show and sponsored the Yukon Science Fair in association with the Yukon-Stikine Science Fair Committee, Innovators in Schools and the Yukon Science Institute.

The Centre designed, coordinated and co-funded the Yukon Energy Fair, which had Bob MacDonald, host of the popular CBC radio show *Quirks and Quarks*, as the keynote speaker. Staff of Science World B.C. were also on hand to perform educational demonstrations for students.

Other public communication activities were conducted over the past year to boost the Centre's profile and showcase local energy solutions

and services. Presentations were made at the Circumpolar Climate Change Conference, Aboriginal Housing Conference, Skills Canada Career Fair, and the annual general meetings of the Association of Yukon Communities, the Dawson City Chamber of Commerce, Tourism Industry Association of Yukon and the Yukon Chamber of Commerce.

The Centre also co-sponsored a series of articles that appeared in the *Yukon News* in late fall 2001. These articles, entitled Yukon Energy Solutions, focused on local stories that described the consumer benefits of different efficiency and renewable technologies, and their relationship to combating climate change.

Other outreach activities included media interviews and the production of program brochures, progress updates and news releases.

COMMERCIAL ENERGY SOLUTIONS BY DESIGN

From its opening day, the Energy Solutions Centre has developed many initiatives for commercial clients since the cost of energy improvements can usually be recouped faster than for residential clients. This is because the size and operation of many businesses provide greater flexibility in the range of applicable efficiency and renewable technologies, allowing savings to be enjoyed sooner.

COMMERCIAL ENERGY MANAGEMENT PROGRAM

The delivery of Yukon Development Corporation's Commercial Energy Management Program (CEMP) was transferred to the Energy Solutions Centre on April 1, 2001. This change from Yukon Housing Corporation direction recognized that the initiative was better suited to the activities and mandate of the Centre.

CEMP assists companies and municipalities to reduce energy demand by conducting technical audits and recommending practical, integrated solutions that provide tangible cost-savings based on a sound business case. Participants are offered financial incentives for equipment and lighting upgrades and advice on energy performance contracting.

Recent improvements to the program have dramatically increased the number of applications. The Commercial Energy Auditor Service has also ensured sufficient technical capacity within the local market for energy

audits and resulted in new partnerships with local contractors for the installation of energy solutions. The success of earlier CEMP projects has triggered substantial interest in the business community, particularly with rising fuel prices over the last two years.

RENEWABLE POWER SALES INCENTIVE PROGRAM

In March 2001, Yukon Development Corporation introduced the Renewable Power Sales Incentive Program to commercial and government customers to promote the use of surplus, renewable hydroelectricity for heating. It facilitates the installation of electric boilers by offering a full service package of building audits and engineering advice.

This allows the client to use surplus power for heating at a regulated discount rate cheaper than propane or stove oil whenever the power is available on the Whitehorse-Aishihik-Faro grid and the Mayo-Dawson City network that will be completed in fall 2002. Given the absence of major or new industrial customers, the current and significant surplus of hydroelectricity is expected to continue over the medium-term.

Financing the capital costs of the electric boilers is offered through a lease arrangement with full recoupment occurring within five to seven years in the private sector and a longer duration in the public sector where a prudent business case exists. One agreement was reached in 2001 while approximately 12 private and public sector projects were in various stages of technical assessment. The Renewable Power Sales

Incentive Program is also targeted to the tourism and hospitality sector through a Memorandum of Understanding.

Aside from the cost-savings to individual clients and the reduction in greenhouse gas emissions from the displacement of fossil fuels, the initiative benefits consumers by expanding the demand for surplus power to increase utility revenue and help reduce pressure for electrical rate hikes.

The program is administered by the Centre in cooperation with Yukon Energy and The Yukon Electrical Company Limited.

TOURISM ENERGY SOLUTIONS PARTNERSHIP

The Tourism Energy Solutions Partnership is an action-oriented, two-year strategy that targets integrated energy solutions for the tourism and hospitality sector. A Memorandum of Understanding was signed in March 2001 with the Tourism Industry Association of Yukon, the Yukon Zone of British Columbia and Yukon Hotels' Association, the Hotel Association of Canada, Tourism Yukon, Natural Resources Canada and Yukon Development Corporation.

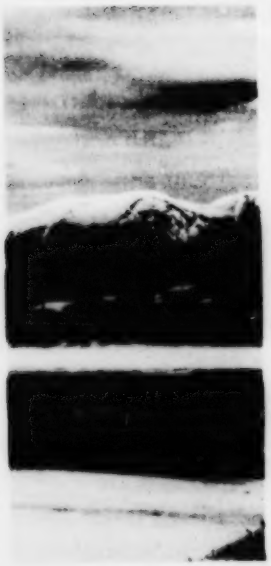
With the Centre's assistance, participants receive comprehensive technical assessments of their facilities and operating systems to identify energy saving opportunities. An energy action business plan is developed which outlines appropriate, cost-effective efficiency and renewable energy solutions along with one-window access to available federal and territorial government energy programs. The Centre's costs

are recovered as a fee-for-service financed by solutions implemented by the client.

The initiative also promotes the Green Leaf Program, an eco-certification initiative from the Hotel Association of Canada, to encourage the tourism industry to adopt environmental practices in their facilities to address waste, energy and water use.

Major hotels in Whitehorse, Watson Lake, Dawson City and other communities are already participating in the partnership while substantial interest has been expressed by other Yukon visitor accommodation facilities. To measure progress, the Centre will provide an annual report detailing the cost savings achieved by participants.

FIRST NATION ENERGY MANAGEMENT SERVICE



In the fourth quarter of 2001, the Energy Solutions Centre designed the First Nation Energy Management Service as a pilot project to proactively develop and implement locally based and supported energy initiatives in the Yukon's aboriginal communities.

The primary focus of the service is to capitalize on the substantial opportunities to improve the energy performance of First Nation building stock to lower operating costs and reduce greenhouse gas emissions. There is also a need to identify and assess the long-term potential of renewable energy sources in or near aboriginal communities that depend on diesel-generated electricity.

The service recognizes that tackling these challenges means respecting the cultural differences and way of life within each aboriginal community. For this reason, the Centre has contracted a First Nation energy technician to promote, design, coordinate and facilitate the delivery of integrated energy solutions.

The position will be a catalyst to enhance local technical capacity over time so building energy management improves and the uptake of federal and territorial energy programs by First Nation communities increases. It is hoped that these activities will also lead to joint energy ventures between aboriginal and other governments as well as the private sector.

GREEN BUILDING DESIGN INITIATIVE

energy solutions centre

Planning for the green building design initiative began in late fall for launch in early 2002. The initiative promoted the economic and environmental benefits of green or high performance buildings, and encouraged local architects, engineers and aligned professions to use a more comprehensive approach in achieving green building design.

The initiative offered training in EE4-CBIP energy modelling analysis software and an integrated learning process charette to enhance the skills and competitiveness of Yukon design firms in this emerging field. In association with Natural Resources Canada and the Sheltair Group, these activities culminated in a green building design competition for a Whitehorse visual arts education centre, co-sponsored with the Yukon Arts Centre.

The competition contained tough building performance criteria for the use of energy, water, waste, construction materials and the site, as well as stringent requirements for the indoor environment and operational cost-effectiveness. Incentives were offered to advance research and local knowledge in resource-efficient technologies, systems and practices appropriate for green buildings in northern environments. Additional points were awarded for companies to engage post-secondary students in the development of their submissions. The winning design was to be selected by jury and announced in July 2002.

The long-term goal of the initiative is to transform the local market so green building design concepts are considered standard building options. This means encouraging government, developers and the

construction industry to consider the long-term operational costs of a facility, not simply the initial capital expense.

Education and promotion will play a significant role in shifting the market to green building design. In this regard, a community workshop and a series of newspaper articles were undertaken in conjunction with the design competition.

LEADING BY EXAMPLE IN THE PUBLIC SECTOR

Similar to the commercial sector, the public sector offers significant opportunities for energy savings as the size and nature of its operations allow for a wider application of integrated energy solutions.

Governments and related agencies may be more amenable to using emerging energy technologies as the financial risk is less of an issue than for smaller private businesses. Moreover, the public sector has traditionally played a leadership role in commercializing efficiency and renewable energy options to meet public policy objectives for the consumer, environment and economy.

This trend is evident in the territory with the Yukon government committing substantial resources to meet objectives in the areas of green power and building energy management over the last four years. The Energy Solutions Centre has assisted with these efforts by using its technical expertise to identify energy-saving opportunities and to facilitate practical responses grounded in sound business cases.

ENERGY MANAGEMENT IN YUKON GOVERNMENT BUILDINGS

In cooperation with Yukon departments of Infrastructure and Community Services, the Centre is assessing the technical feasibility of solar hot water heating for community swimming pools in Carcross, Pelly Crossing, Beaver Creek and Ross River, and reviewing the potential for solar walls at a grader station and rural fire halls.

Energy audits were started at several territorial government facilities to determine the viability of using low-cost, surplus hydropower for heating through the Renewable Power Sales Incentive Program. The Centre also supported head-start projects for this initiative by facilitating the installation of dual fuel equipment at the extended care facility, the addition to Holy Family Elementary School in Whitehorse, and the J.V. Clark School in Mayo.

WHITEHORSE GENERAL HOSPITAL

The Centre partnered with the management of Whitehorse General Hospital to develop practical proposals for converting the facility into an energy efficient and renewable energy showcase. Technical studies were conducted on the feasibility of using surplus hydroelectricity for heating, installing a solar wall, improving the efficiency of the heat recovery system, converting the domestic hot water system to solar heat, and installing heat pumps for the building's chiller.

Yukon Hospital Corporation is expected to make a decision to proceed with the recommended energy solutions in 2002.

PUBLIC BUILDINGS ENERGY CONSUMPTION DATABASE

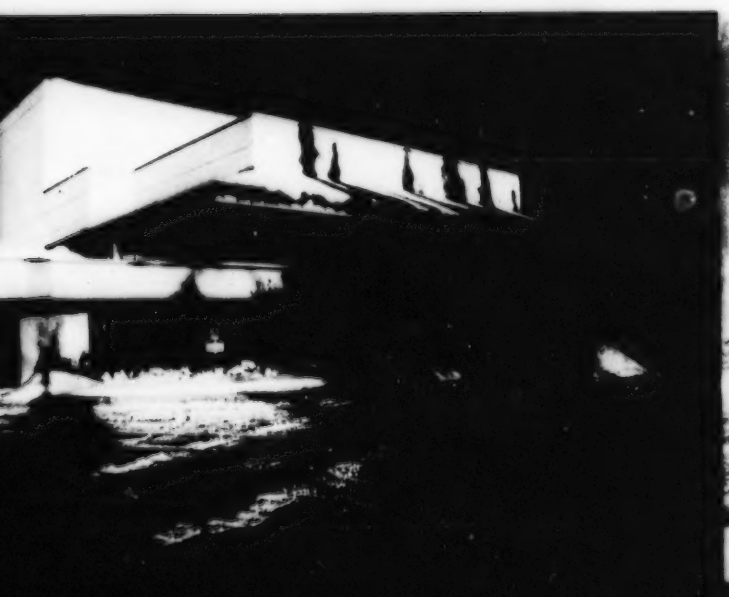
The Public Buildings Energy Consumption Database, a partnership between the Energy Solutions Centre and federal, territorial and local governments, collects baseline data on electricity and heating fuel consumption for public buildings. These figures provide a critical tool for developing and implementing targeted efficiency and renewable energy solutions for this sector.

The project was initiated in the summer of 2001 with Yukon government building data expected to be operational by the end of the second quarter in 2002.

INNOVATIVE PROGRAM DELIVERY FOR THE RESIDENTIAL SECTOR

The residential sector initiatives pursued by the Energy Solutions Centre in 2001 focused on demand side management activities and new appliance technology, primarily in communities dependent on diesel-generated electricity. This approach targeted the economic and environmental costs of transporting and using fossil fuel for power production while recognizing the hydroelectric surplus that exists in other parts of the territory.

The efficiency initiatives developed over the past year relied heavily on research obtained from a recent housing study completed by Yukon Housing Corporation, as well as a residential energy end-use survey commissioned by the Centre and conducted by the Yukon Bureau of Statistics in July 2001.



The Centre expects to complement its demand side management activities over the next year with measures that displace or reduce residential fossil fuel heating with renewable sources.

HOUSE CALLS ENERGY EFFICIENCY PROGRAM

The House Calls Energy Efficiency Program was a highly successful initiative that delivered cost-savings and decreased greenhouse gas emissions by reducing residential energy use, primarily in areas dependent on diesel-generated power. In partnership with Natural Resources Canada, Yukon Energy, the Energy Solutions Centre and others, the Yukon Conservation Society installed free energy-saving products in close to 1,500 homes in 18 communities throughout the territory.

Participants received an insulating blanket on their electric water tank and a compact fluorescent light bulb was installed in a suitable location. High-quality low-flow showerheads, sink aerators, sample receptacle gaskets and plastic window film were supplied as required. Homeowners also received information about other energy-saving products, methods to further decrease residential energy consumption and the link between energy use and climate change.

In the winter, in support of the Yukon government's response to rising heating fuel costs, a special initiative of the program was targeted to seniors. A regular home visit was offered as well as an educational workshop on energy efficiency in Whitehorse in cooperation with Yukon Council on Aging, Yukon Housing Corporation, Yukon

Development Corporation and the Department of Health and Social Services.

Before ending in August 2001, the house calls project achieved a remarkable 100% uptake in two communities and penetrated 15% to 20% of the Yukon's residential housing stock. The average annual savings for participants was forecast at $216 while territorial-wide diesel-generated electricity was projected to decrease by 7%. Utility cost reductions were estimated at $295,000 per year and 1,845 tonnes of annual greenhouse gas emissions were likely to be eliminated.

The program also trained 20 energy technicians around the Yukon, creating a capacity to deliver future demand side management initiatives.

WOODSTOVE REPLACEMENT AND EDUCATION PILOT PROJECT

The Woodstove Replacement and Education Pilot Project was launched in November to improve residential wood heating efficiency. This project is a collaboration of Yukon Development Corporation, Natural Resources Canada, City of Whitehorse, and Yukon Conservation Society. It is one of seven wood education pilot projects in the country and the only such initiative in northern Canada.

The pilot program exchanges old, inefficient woodstoves with new models in the Riverdale area of Whitehorse. This neighbourhood was selected due to the woodsmoke visibility and air quality problems it experiences in winter from inefficient wood burning during periods of thermal inversions.

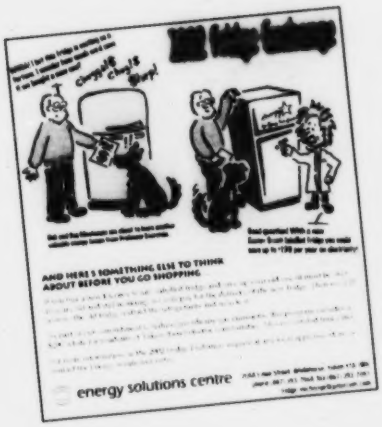
The project saves consumers money by reducing wood consumption and improves stove safety and air quality. Old woodstoves are disabled and collected in a central location for future scrap metal recycling. The combination of these efforts helps to ensure that wood is a more cost-effective and sustainable energy source for space heating.

Consumer participation has been encouraged through information, rebates, retail promotions and special prizes, as well as public workshops to promote better burning practices. Wood heating remains popular in the Yukon with about 22% of all households using it as their primary source.

The pilot project also presented certified wood energy technology training (WETT) sessions for installers, suppliers and inspectors. Safe, effective wood burning practices were promoted, retailers were encouraged to supply efficient woodstoves to shift market demand, and strategic alliances were developed between energy and environmental agencies to support a larger scale initiative.

ENERGY EFFICIENCY APPLIANCE INITIATIVE

The development of the Energy Efficiency Appliance Initiative began in the third quarter of 2001. In partnership with Natural Resources Canada, Yukon retailers, catalogue outlets, municipalities, First Nations and a variety of territorial government agencies, this comprehensive program will help shift the local market towards energy efficient, residential appliances.



This initiative will consist of several complementary and interconnected components. A consumer education and awareness segment will promote the economic and environmental benefits of energy efficient home appliances through workshops, displays, demonstrations, testimonials, advertising, marketing and consultation.

These benefits will be reinforced by training and working with local appliance retailers and service personnel to promote energy efficient appliances, EnerGuide and ENERGY STAR® programs and labelling, and the advantages of stocking these models as standard practice rather than as specialty items. Follow-up with participants will result in the design and development of joint displays, marketing, and coordination on other initiatives. Companies that complete the training and agree to promote ENERGY STAR® labelled appliances will be eligible for financial incentives from the sale of energy efficient refrigerators and the 2002 Fridge Exchange.

The 2002 Fridge Exchange will target the replacement of 500 working fridges, 10 years old or more, with new, ENERGY STAR® labelled models. In communities that rely on diesel-generated electricity, consumers will receive a rebate to purchase the new fridge along with free delivery and removal of the old appliance. People residing in hydroelectric zones will be offered a no-charge removal and recycling service for old working fridges to eliminate these units from the market.

In collaboration with Yukon Housing Corporation and local contractors, the final component will involve a pilot project to incorporate an appliance section to the existing EnerGuide for Houses audits. The collection of baseline data on the age and use of household appliances will better define the local market and help design future energy initiatives.

The Energy Efficiency Appliance Initiative is scheduled to be launched in the first half of 2002.

SHIFTING THE MARKET THROUGH NEW TOOLS AND TRAINING

Consistent with its mandate to transform the market to efficiency and renewable technologies, the Energy Solutions Centre expanded local technical capacity by delivering a series of training courses over the past year. The courses responded to a specific market need, developed skills within a particular field, or complemented initiatives planned or already delivered by the Centre.

The hands-on training assisted architects, engineers, building and environmental regulators, facility owners, contractors, appliance and energy technology retailers, and tradespeople to enhance their marketability and competitiveness. The courses introduced new efficiency and renewable energy technologies to the Yukon while improving the private sector capability to design and install these integrated energy solutions.

The Centre consciously ensured that all training resulted in certification recognized nationally or by a specific industry. This guarantees that an identified level of expertise is locally available for consumers, and over time, may lead to formal or informal standardization. In 2002, much of the training previously provided will be re-offered and new courses developed to reach other segments of the Yukon energy market.

RETSCREEN

The RETScreen course, co-sponsored with Natural Resources Canada, was held in March and marked the first time it was offered anywhere in the country. RETScreen is renewable energy project analysis software created by NRCan's CANMET Energy Diversification Research Laboratory.

The course increased awareness of emerging renewable technologies and strengthened the capacity to evaluate, plan, finance and implement these energy solutions. Upon completion, students were able to perform high quality, low-cost RETScreen feasibility studies of renewable energy projects.

Energy Solutions Centre staff now regularly assists professional and lay users to solve problems or interpret results from the software, which is accessible from the Centre or the NRCan website.

INDOOR AIR QUALITY

In June and November, indoor air quality courses were offered to heating and ventilation contractors, building and real estate managers and owners, health and safety professionals, and environmental and medical practitioners. Participants learned to measure minute particle levels and to locate the source of indoor air quality problems using a special tool called the P-Trac Ultrafine Particulate, introduced to the Yukon by the Centre.

The training provided the opportunity for participants to work in guided teams to conduct an indoor air quality evaluation and locate possible contamination sources. Students who obtained certification can rent the counter from the Centre.

WOOD ENERGY TECHNOLOGY TRAINING

WOOD ENERGY TECHNICIANS OF BRITISH COLUMBIA

The Wood Energy Technology Training (WETT) course held in late fall offered an overview of wood heating technology and the regulations that govern the safe and energy-efficient installation of wood burning appliances. The completion of the training, plus a two-day specialized component with practical course work, enables a participant to become a WETT-certified chimney sweep, woodstove installer or woodstove retailer.

WETT was an important complement to the Woodstove Replacement and Education Pilot Project.

INFRARED THERMOGRAPHY

The Level 1 Certification Infrared Thermography course conducted in November taught participants how to operate an infrared camera, use thermographs to establish a maintenance program and understand thermal data collection theory. The curriculum included a hands-on workshop for participants to find and quantify heat-related problems.

The course was ideal for energy auditors, building designers and contractors, inspectors and electrical utilities. The training can be applied to a wide variety of areas including building insulation void detection, electrical overheating, roof moisture surveys, leaking valves and radiant heating.

Students who obtained certification can rent the infrared camera from the Centre.

PROFESSIONAL DEVELOPMENT FOR YUKON ENGINEERS

A three-year cooperation agreement was signed with the Association of Professional Engineers of Yukon to identify and expand training and development opportunities in the area of sustainable energy development.

COMMERCIAL ENERGY AUDITOR SERVICE

The Centre assumed delivery of the Commercial Energy Auditor Service on April 1, 2001. This initiative, created in 2000 by Yukon Development Corporation, Yukon Energy and Yukon Housing Corporation, trains and certifies local commercial energy auditors based on the Canadian Institute for Energy Training program.

Establishing a pool of qualified auditors is fundamental to the success of efficiency and renewable energy programs. Audits provide essential baseline information for determining integrated energy solutions that are technically and financially appropriate for improving building energy management. Since the inception of the service, 14 people have qualified as commercial energy auditors.

In addition, the Centre uses a consortium of Yukon architects and mechanical and electrical engineering firms to audit more specialized projects.

COMMERCIALIZING TOMORROW'S TECHNOLOGY TODAY

The research and development activities of the Energy Solutions Centre focus on commercializing existing efficiency and renewable technologies to reduce fossil fuels for heating and electricity generation. Many potentially effective technologies, such as heat pump technology, are simply not known, not available or not used in the territory. Past experience shows that these products are not always suited for the extremes of the sub-arctic climate.

For this reason, the Centre established weather databases for three communities to identify the conditions to which the technologies might be exposed, and conducted demonstration and pilot projects to determine if the technical barriers could be addressed through adaptation. The Centre plans to expand the weather databases to all Yukon communities over the coming year.

AIR-TO-AIR HEAT PUMP PILOT PROJECT

In 2001, the Centre partnered with a Whitehorse citizen to examine the technical and economic viability of supplementing an existing propane-fired furnace with an air-to-air heat pump.

An air-to-air heat pump uses a compressor to remove heat from outside air and transfer it through a medium to the interior of a residence. It employs the same principle as a refrigerator, which draws out heat to cool food and expels it from the bottom of the appliance. The pump also works in reverse to cool the inside of a home in summer by removing hot air from the interior and dumping it outside. However, this technology is cost prohibitive to operate when the outdoor

temperature drops below -20 degrees Celsius and for this reason, is usually part of a dual heating system.

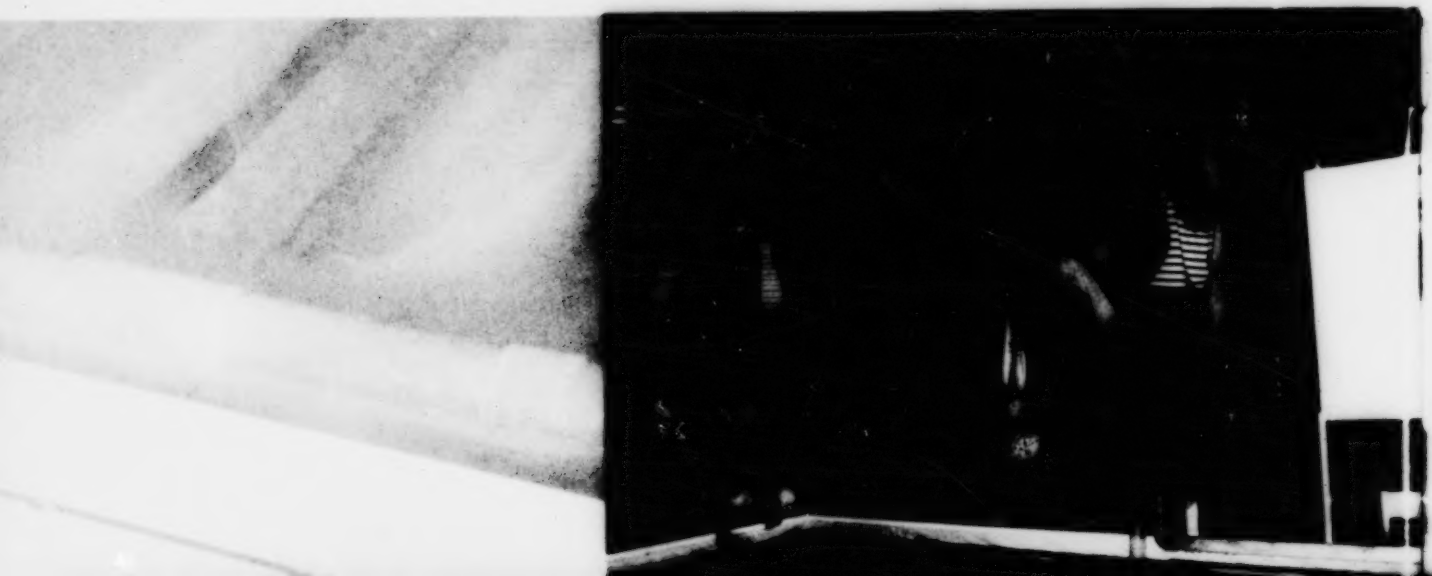
The Centre paid to install two separate electrical meters at the residence to determine the exact amount of energy generated and the cost benefit of the air-to-air heat pump. The initial assessment of the demonstration project and the potential for a broader application appear promising.

An air-to-air heat pump is estimated to be five to 10 times more efficient than a propane furnace, while the capital costs will be recouped within four years. Moreover, the system has been completely reliable and almost maintenance free.

GROUND SOURCE HEAT PUMP PROJECT

Steps were taken to explore the feasibility of ground source heat pumps for building heating using a warm-water aquifer in the Whitehorse area. If technically and economically feasible, the technology offers an opportunity to take advantage of a renewable and cost-effective earth energy resource to displace fossil fuel heating.

Ground source heat pumps extract geothermal heat from water or a glycol solution, intensify the heat and deliver it through an exchanger to a heating system using either hydronic or forced air. Since heat is transferred rather than produced, a ground source heat pump can deliver up to four units of energy for every unit it consumes by using relatively constant, underground temperatures.



The Centre advanced the possibility of a demonstration project in 2001 by securing support from the Department of Education, commissioning a technical and financial feasibility study, and filing for a water license with the Yukon Territory Water Board. Plans for technical training in ground source design and installation through the International Ground Source Heat Pump Association were also initiated.

NEW DIRECTIONS FOR A NEW YEAR

Over the coming year, the Energy Solutions Centre will target new sectors of the Yukon energy market.

Discussions with Natural Resources Canada are underway to research and address market and technical barriers for renewable energy applications for the off-grid residential sector, which would greatly benefit existing federal and territorial programs. Baseline data of existing systems and their performance would be gathered, application opportunities identified and demonstration projects conducted. Public education, promotion and training are expected to play significant roles in the implementation of this initiative.

Although fossil fuel heating will continue to be a reality, the Centre is committed to reducing that reliance. Recent studies have confirmed that many residential furnaces in the territory are old and irregularly maintained. This has decreased burning efficiency and reliability and negatively affected indoor air quality and living comfort. It is also clear that a lot of systems are oversized and unnecessarily increasing the energy bill of homeowners.

As a result, the Centre is investigating opportunities to replace forced air furnaces and domestic electric hot water tanks with efficient, best-of-class integrated combo systems in communities dependent on diesel-generated electricity. Integrated combo systems have an oil-fired water boiler that heats water for residential use and transfers heat from the water through a fan coil for central heating.

The installation of integrated combo systems would save consumers money on heating and electricity bills, and improve indoor air quality and living comfort. The viability of the technology would be promoted, helping to shift market demand to this product over time. And fossil fuel heating and electricity generation could be reduced along with associated greenhouse gas emissions.

The Centre will assess the effectiveness of current pilot projects involving household technologies and may proceed with new measures in 2002. In response to private sector initiatives, collaborative research is being conducted on the role of building, appliance and energy regulations appropriate for the northern environment to provide cost-savings, reduce greenhouse gas emissions and build a competitive economy.

Efforts to optimize efficiency and renewable energy alternatives for new and existing buildings will be re-doubled to lower operating costs in private, non-government, municipal, First Nation and public government sectors. Clients will be encouraged to incorporate green building design concepts from the onset and support prudent planning and life cycle costing for northern conditions.

Anticipated improvements in regional program delivery with NRCan will help to promote the financial and technical assistance available through federal initiatives such as the Commercial Building Incentive Program, Renewable Energy Deployment Initiative, and Innovators Program.

The Centre will target integrated energy solutions for local governments through a multi-year agreement. Similar to the arrangement with the tourism industry, the partnership will facilitate comprehensive energy audits for municipal infrastructure to assess the potential for cost-effective efficiency and renewable energy technology upgrades. It will

work with local governments to implement integrated solutions and lever financial assistance from federal and territorial energy programs.

SUCCESS THROUGH SUPERIOR PERFORMANCE

With the opening of the Energy Solutions Centre, the Yukon's efforts in the energy management field increased notably in 2001. The scope and volume of its activity, coupled with effective partnerships with the public and private sectors, led to a series of practical energy solutions with tangible, measureable outcomes.

The success of the regional partnership model adopted by NRCan and the Yukon government has helped establish the territory as a recognized leader in efficiency and renewable energy programs and increasingly, as a possible delivery template for other territories and provinces.

The Energy Solutions Centre is strongly committed to sustaining this level of excellence. Its efforts to identify, develop and implement integrated energy solutions for the benefit of residential, commercial, industrial and government consumers will be ongoing and continue to be delivered, primarily through the Yukon private sector.

The Centre plans to expand its role as the catalyst to shifting market demand to efficiency and renewable solutions so these technologies become standard options rather than specialty features.

The opportunities are only limited by imagination and resolve.

The Energy Solutions Centre contributed to Yukon Development Corporation earning the Gold Level Reporter as well as the National Leadership Award for Small to Medium Enterprises (SME). The Gold Level Reporter is the highest designation issued by Voluntary Challenge and Registry Inc. This agency promotes, assesses and recognizes the effectiveness of the voluntary approach to address climate change by managing a registry. The SME 2001 Leadership Award was selected by an independent, multi-stakeholder panel based on VCR Inc. registrants that displayed extraordinary commitment, action and leadership in voluntarily reducing greenhouse gas emissions.

Sally Wright, Chair
Ms. Wright is a self-employed artist with an active interest in efficiency and renewable technologies, and significant involvement in environmental sustainability and science education.

Fred Blanchard, Director
Fred Blanchard is a member of the Little Salmon/Carmacks First Nation and plays an important role in promoting energy efficiency programs within Whitehorse and the rural communities.

Carl Charlie, Director
Mr. Charlie is a member and former councillor of the Vuntut Gwitchin First Nation. He has extensive experience in land use planning and a strong interest in assisting First Nation communities achieve greater energy sustainability and independence.

Duncan Sinclair, Director
Mr. Sinclair is the Chief Executive Officer of Yukon Development Corporation (YDC). He plays a pivotal role in the creation of innovative efficiency and renewable programs by YDC and its subsidiaries, which draws on his many years of senior management experience within the public sector.

BOARD OF DIRECTORS

Energy Solutions Centre
206A Lowe Street
Whitehorse, Yukon Y1A 1W6
Phone: (867) 393-7063
Fax: (867) 393-7061
website: www.nrgsc.yk.ca

DIRECTORS AND STAFF at December 31, 2001

BOARD OF DIRECTORS

Chair
Sally Wright

Directors
Fred Blanchard
Carl Charlie
Duncan Sinclair

OFFICERS

Managing Director
Don Flinn

Corporate Treasurer
Wendy Fendrick

Corporate Secretary
Rod Snow

Assistant Corporate Secretary
Darlene Morgan

AUDITOR

KPMG LLP Chartered Accountants

Don Flinn P.Eng,

Managing Director of the Energy Solutions Centre

Currently president of the Association of Professional Engineers of Yukon, Don offers over 30 years of engineering experience to the Centre and its activities in support of private and public sector clients throughout the territory.

AUDITED FINANCIAL STATEMENTS

KPMG LLP
Chartered Accountants
200 – 206 Seymour Street
Kamloops BC V2C 6P5
Canada

Telephone (250) 372-5581
Telefax (250) 828-2928
www.kpmg.ca

Energy Solutions Centre Inc.
Financial Statements
For the year ended December 31, 2001

Auditors' Report

To the Shareholder of
Energy Solutions Centre Inc.

We have audited the balance sheet of Energy Solutions Centre Inc. as at December 31, 2001 and the statements of operations and retained earnings and cash flows for the year then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Company as at December 31, 2001 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

KPMG LLP

Chartered Accountants

Kamloops, Canada
March 15, 2002

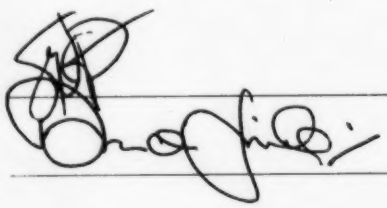
KPMG LLP, a Canadian owned limited liability partnership established under the laws of Ontario, is a member firm of KPMG International, a Swiss association.

Energy Solutions Centre Inc.
BALANCE SHEET

December 31, 2001		2001
ASSETS		
Current		
Cash	$	463
Accounts receivable		9,875
		10,338
Advances to related party (Note 3)		137,819
Capital assets (Note 2)		104,362
	$	252,519
LIABILITIES AND SHAREHOLDER'S EQUITY		
Current		
Accounts payable and accrued liabilities	$	78,193
		78,193
Deferred capital revenue		95,718
		173,911
Shareholder's equity		
Share capital (Note 4)		100
Retained earnings		78,508
		78,608
	$	252,519

Contingencies (note 5)

On behalf of the Board:



Director

Director

Energy Solutions Centre Inc.
STATEMENT OF OPERATIONS AND RETAINED EARNINGS

For the year ended December 31, 2001		2001
Revenue		
Program delivery	$	701,090
Course fees and equipment rental		26,276
Amortization of deferred capital revenue		8,393
		735,759
Expenses		
Advertising and promotion		9,070
Amortization		8,393
Board		1,589
Consulting fees		385,529
Grants		8,826
Office and general		24,022
Professional fees		16,039
Rent		34,049
Telephone		4,308
Training courses		36,252
Travel		35,328
Wages and benefits		93,846
		657,251
Net income for the year, being retained earnings, end of year	$	78,508

Energy Solutions Centre Inc.
STATEMENT OF CASH FLOWS

For the year ended December 31, 2001		2001
Cash provided by (used in)		
Operating activities		
Net income for the year	$	78,508
Item not involving cash		
Amortization of capital assets		8,393
		86,901
Changes in non-cash working capital balances		
Accounts receivable		(9,875)
Accounts payable and accrued liabilities		78,193
		155,219
Investing activities		
Purchase of capital assets		(112,755)
Common shares issued		100
		(112,655)
Financing activities		
Advances to related party		(137,819)
Deferred capital revenue		95,718
		(42,101)
Cash, end of year	$	463
Supplementary information		
Interest paid		Nil
Taxes paid		Nil

Energy Solutions Centre Inc.
NOTES TO FINANCIAL STATEMENTS

For the year ended December 31, 2001

1. SIGNIFICANT ACCOUNTING POLICIES

Nature of business

The Company is incorporated under the laws of Yukon and is engaged in promoting the potential of energy efficiency and green power as a solution to climate change by providing services to implement projects that will reduce greenhouse gas emissions and reduce energy costs in Yukon.

Financial instruments

The Company's financial instruments consist of cash, accounts receivable, accounts payable, and amounts due to related parties. Unless otherwise noted, it is management's opinion that the Company is not exposed to significant interest, currency or credit risks arising from these financial instruments.

Due to their short-term nature the fair values of these financial instruments approximate their carrying values.

Capital assets

Capital assets are stated at cost less accumulated amortization. Amortization is provided over the estimated useful life of the assets, on a straight-line basis, at the following annual rates:

Alternative energy equipment	11%
Furniture and fixtures	7%
Computer equipment	20%
Computer software	15%

Deferred capital revenue

Capital asset funding received from the Federal Government through the parent company is recognized as revenue at the same rate as capital assets are amortized.

Income taxes

The Centre is not subject to federal or territorial income taxes, by Section 149 (4) of the Income Tax Act, as the sole shareholder is a territorial crown corporation.

Revenue recognition

Revenue is recognized when services are provided.

Measurement uncertainty

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the period. Actual results could differ from those estimates.

Energy Solutions Centre Inc.
NOTES TO FINANCIAL STATEMENTS

For the year ended December 31, 2001

2. CAPITAL ASSETS

		2001
	Cost	Accumulated amortization
Alternative energy equipment	$ 3,088	$ (226)
Furniture and fixtures	13,728	(430)
Computer equipment	85,115	(7,080)
Computer software	10,824	(657)
	$112,755	**$ (8,393)**
Net book value		**$104,362**

3. ADVANCES TO RELATED PARTY

The following table summarizes the Company's related party transactions for the year:

	2001
Revenue	
Sales of product to:	
Parent company	$701,090

These transactions are in the normal course of operations and are measured at the exchange value (the amount of consideration established and agreed to by the related parties), which approximates the arm's length equivalent value for sales of product.

At the end of the year, the advances to related party are as follows:

	2001
Parent company	$137,819
	$137,819

These balances are non-interest bearing with no specific terms of repayment and have arisen from the sales of product and provision of services referred to above.

The parent company also provides financial, management, and administrative services to the company without consideration.

During the year the company paid $13,397 for consulting fees to an officer. These transactions are in the normal course of operations and are measured at the exchange value (the amount of consideration established and agreed to by the related parties), which approximates the arm's length equivalent value for sales of product.

Energy Solutions Centre Inc.
NOTES TO FINANCIAL STATEMENTS

For the year ended December 31, 2001

4. SHARE CAPITAL

Authorized

unlimited number of common shares

Issued

	2001
1 common share	$100

5. CONTINGENCIES

The Company is self-insured up to $1,000,000. Losses resulting from any claims will be charged to operations when paid.

6. ECONOMIC DEPENDENCE

Sales to Yukon Development Corporation, the parent company, represent 96% of the Company's total sales for the year ended December 31, 2001.

7. OPERATIONS

The company was incorporated on December 15, 2000, and commenced operations in January 2001.

PHOTOGRAPH CREDITS
Energy Solutions Centre Annual Report

ESC: Energy Solutions Centre
YE: Yukon Energy
YG: Yukon government

CA: Cathie Archbould
MB: Marten Berkman
PL: Peter Long

back of letter: Board of Directors (MB)

facing p.1: staff of Energy Solutions Centre, March 2001 (CA)

p.3: diesel plant at Whitehorse dam (PL); winter in the Yukon (PL)

p.4: pit at Faro mine (YG); Faro Hotel (YG)

p.6: explaining the House Calls project (CA)

p.7: signing Canada-Yukon agreement (YG); Energy Solutions Centre (YG)

p.8: Stirling engine (PL); winter biking in the north (PL); fuel cell (PL)

p.9: Bob MacDonald and students at the science fair (CA)

p.10: courtesy of the Yukon News

p.11: Mayo dam (YE); Whitehorse dam (YG)

p.12: signing tourism agreement (YG); Whitehorse dam with Mount Lorne in background and Robert Service Campground in foreground (PL)

p.13: Carcross (PL)

p.14: green building logo designed by Tanya Handley; green building workshop (MB)

p.15: community swimming pool (ESC)

p.16: two views of Whitehorse General Hospital (PL)

p.17: Yukon Arts Centre (PL); Andrew Philipsen Justice Centre (PL)

p.18: working on the House Calls project (CA)

p.19: two views from woodstove replacement project (CA)

p.20: woodsmoke over Riverdale (YG); old fridges (PL)

p.21: ad for fridge exchange program

p.22: CD for NRCan RETScreen course

p.23: P-Trac workshop (CA); WETT booth (ESC)

p.24: trade show display (CA)

p.25: hybrid car (PL); air-to-air pump and electrical meter (CA)

p.26: ground source heat pump display (ESC)

p.27: solar panels on top of Gold Rush Inn (CA); bench along the Millennium Trail (PL)

p.29: Ice Lake (PL)

p.30-31: board members and Don Flinn (MB, ESC)

p.32: Energy Solutions Centre (PL)

GREEN BUILDING LOGO©

Our structure

- **A two-story structure represents a commercial or institutional building.**
- **Puzzle pieces represent integration of green building components affecting the building use.**
- **Northern lights, snow and fir tree represent our Yukon environment.**

Our symbols

sun = energy
promote efficient use of energy resources

plant = indoor air quality/environment
promote a healthy indoor environment

window, log, bricks = materials/products
promote materials from local or sustainably managed sources

recycling symbol = solid waste
minimize waste generation and maximize re-use and recycling

water drop = water
promote efficient water use

tree = respect the site
promote respect of the site and surroundings

art tools and notebook = building use
for the green building design initiative, the use of the centre space is for visual arts education

energy solutions centre

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